

**OVERVIEW OF AIR REGULATIONS AFFECTING  
THE IRON AND STEEL INDUSTRY**

**Iron and Steel Stakeholder Meeting**

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**Federal Building - Chicago, IL**

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## **Topics to Cover**

- Air Regulations Affecting the Iron & Steel Industry
- Profile of the Integrated Iron & Steel Industry
- Overview of the Coke Oven Industry  
Handout: “Active Domestic Coke Plants”
- Highlights of 40 CFR Part 63, Subpart L - NESHAP for Coke Oven Batteries
- Emission Limits for Existing Coke By-Product Batteries  
Handout: “Coke Oven NESHAP Track Selection Table”

## **Air Regulations Affecting the Iron & Steel Industry**

### Existing NSPSs

- 40 CFR Part 60, Subpart N - Standards of Performance for Primary Emissions from Basic Oxygen Process Furnaces for Which Construction is Commenced After June 11, 1973 - promulgated July 25, 1977
- 40 CFR Part 60, Subpart Na - Standards of Performance for Secondary Emissions from Basic Oxygen Process Steelmaking Facilities for Which Construction is Commenced After January 20, 1983 - promulgated January 2, 1986
- 40 CFR Part 60, Subpart AA - Standards of Performance for Steel Plants: Electric Arc Furnaces Constructed After October 21, 1974, and On or Before August 17, 1983 - promulgated October 31, 1984
- 40 CFR Part 60, Subpart AAa - Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 7, 1983 - promulgated October 31, 1984

### Existing NESHAPs (National Emission Standards for Hazardous Air Pollutants)

- 40 CFR Part 61, Subpart L - National Emission Standard for Benzene Emissions from Coke By-Product Recovery Plants - promulgated September 14, 1989
- 40 CFR Part 63, Subpart L - National Emission Standards for Coke Oven Batteries - promulgated October 27, 1993

### Upcoming NESHAPs

- Steel Pickling - HCl Process - court-ordered deadline May 15, 1999
- Integrated Iron & Steel Manufacturing (includes sinter plants, blast furnaces, BOF shops, & ancillary operations) - statutory deadline November 2000
- Coke Ovens: Pushing, Quenching, & Battery Stacks - statutory deadline November 2000
- Residual Risk for Coke Ovens - statutory deadline October 2001  
Note: Residual risk standards would only affect the 8 batteries that chose the MACT (Maximum Achievable Control Technology) track.

## Profile of the Integrated Iron and Steel Industry

No.	Company	City & State	BOF Shop		Blast Furnaces	Sinter Plants	Coke Batteries
			Vessels	Shops			
1	Acme Steel	Riverdale, IL	2	1	1		2
2	AK Steel	Ashland, KY	2	1	1		2
3	AK Steel	Middletown, OH	2	1	1	1	1
4	Bethlehem Steel	Burns Harbor, IN	3	1	2	1	2
5	Bethlehem Steel	Sparrows Pt., MD	2	1	1	1	
6	Geneva Steel	Orem, UT	2	1	3	1	4
7	Gulf States Steel	Gadsden, AL	2	1	1		2
8	Inland Steel	East Chicago, IN	4	2	3	1	
9	LTV Steel	Cleveland, OH	4	2	3		
10	LTV Steel	East Chicago, IN	2	1	2	1	
11	National Steel	Granite City, IL	2	1	2		2
12	National Steel	Ecorse, MI	2	1	3		1
13	Rouge Steel	Dearborn, MI	2	1	2		
14	USX	Braddock, PA	2	1	2		
15	USX	Fairfield, AL	3	1	1		
16	USX	Gary, IN	6	2	4	1	4
17	USS/Kobe Steel	Lorain, OH	2	1	2		
18	WCI Steel	Warren, OH	2	1	1		
		Youngstown, OH				1	
19	Weirton Steel	Weirton, WV	2	1	2		
20	Wheeling-Pittsburgh	Mingo Junction, OH	2	1	2		
		Follansbee, WV				1	4
Totals			50	23	39	9	40

**Notes:** AK Steel, Ashland, KY (formerly Armco Steel) — Sinter Plant shut down in July, 1992 and is not expected to start up again.  
Geneva Steel, Orem, UT — Sinter Plant is not presently operating but may be restarted depending on market conditions.  
Weirton Steel, Weirton, WV — Sinter Plant shut down in late 1997 and is not expected to start up again.

The 4 integrated plants that ship coke off-site are not on the above list.

## Overview of the Coke Oven Industry

### Existing Coke Plants and Batteries

(See handout entitled “Active Domestic Coke Plants”)

<u>Plant Type</u>	<u>Number of Plants</u>	<u>Number of Batteries</u>
• Integrated, by-product	14	40
• Merchant, by-product	9	18
• <u>Merchant, nonrecovery</u>	<u>2</u>	<u>8</u>
• Totals	25	66

- Most coke plants have 2 or 3 batteries. The largest coke plant, US Steel in Clairton, PA has 12 batteries.
- Ovens per battery vary from 35 to 100.

### Existing Nonrecovery Coke Plants

- Indiana Harbor Coke - East Chicago, IN      Nonrecovery plant (w/ quench towers)
- Jewell Coke & Coal - Vansant, VA      Nonrecovery plant (w/ quench towers)

### Recently Shutdown Coke Plants

- Bethlehem Steel - Bethlehem, PA      Shutdown (coke plant & iron & steel plant) 3/98
- Koppers - Dolomite, AL      Shutdown 2 batteries 3/97 & other 4 batteries 1/98
- LTV Steel - Pittsburgh, PA      Shutdown (coke plant only) 3/98

### Upcoming Coke Plants

- AK Steel - Middletown, OH      Plan to build nonrecovery ovens by 2000
- LTV Steel - Pittsburgh, PA      May build nonrecovery ovens by 2002

### Integrated vs. Merchant Plants

- There are 11 merchant plants and 14 integrated plants. See handout entitled “Active Domestic Coke Plants” for a list of integrated vs. merchant plants.

### Furnace Coke vs. Foundry Coke

- There are two major categories of metallurgical coke: furnace coke and foundry coke. Furnace coke is used in steel mill blast furnaces and foundry coke is used in foundry cupolas. In general, foundry coke is made from coals with a lower volatility, is heated longer, and is larger than furnace coke.

## Highlights of 40 CFR Part 63, Subpart L NESHAP for Coke Oven Batteries

### Definitions

- A brownfield coke oven battery is a new battery built to replace an old existing battery if the new battery does not result in an increase in the plant's coke capacity.
- A by-product coke oven battery is a group of ovens connected by common walls where coal undergoes destructive distillation under positive pressure to produce coke and coke oven gas from which by-products are recovered.
- A greenfield coke oven battery is a battery constructed on or after December 4, 1992 at a plant where no batteries previously existed.
- A nonrecovery coke oven battery is a group of ovens connected by common walls operated as a unit where coal undergoes destructive distillation under negative pressure to produce coke. By-products are not recovered from the combustion of the coke oven gas.
- A padup rebuild coke oven battery is a an existing battery completely reconstructed on or after December 4, 1992 on the same site and pad that does not result in an increase of the design capacity of the coke plant.

### Section 63.302(b)

- This section requires by-product coke oven batteries identified as new or greenfield batteries to meet the emission limits for existing nonrecovery batteries. **This requirement forces new or greenfield batteries to be nonrecovery batteries or a new and improved recovery technology because by-product batteries can not meet the 0 (zero) leak limits.**

### Sections 63.302 (c) & (d)

- These sections acknowledge that a new recovery technology may be developed. Section 63.302(d) specifies emission limits for new recovery technologies and limits overall annual emissions from new recovery technologies with different types of emission points to less than limits equivalent to those for doors, lids, offtakes, and charging.

### Section 63.303

- This section specifies limits for existing and new nonrecovery batteries. **Any new nonrecovery battery whether at an existing coke plant or new coke plant must comply with the requirements for new nonrecovery batteries.** The requirements for new nonrecovery batteries are 0 percent leaking doors, lids, and offtakes, and are more stringent than those for existing nonrecovery batteries in that new nonrecovery battery owners must install capture and control equipment for charging emissions.

### Emission Limits for Existing By-Product Batteries

- The visible emission limits for percent leaking coke oven doors, topside port lids, and offtake systems are based on a 30-run rolling arithmetic average. Charging limits are based on the 30-day rolling logarithmic average of the seconds of visible emissions per charge.
- Compliance is determined on a daily basis using the calculated average of the observations for that day averaged with the previous 29 daily observations. The first compliance determination is made after 30 daily observations are performed.
- The visible emission limits for existing by-product batteries are summarized in the table below for both compliance tracks.

Emission Point	MACT Track Limits		LAER Extension Track Limits		
	12/31/95	01/01/03	11/15/93	01/01/98	01/01/10*
6-m (or taller) doors, PLD	6.0	5.5	7.0	4.3	4.0
Doors on foundry batteries, PLD	5.5	5.0	7.0	4.3	4.0
All other doors, PLD	5.5	5.0	7.0	3.8	3.3
Lids, PLL	0.6	0.6	0.83	0.4	0.4
Offtakes, PLO	3.0	3.0	4.2	2.5	2.5
Charging, sec/charge	12	12	12	12	12

PLD = percent leaking doors

PLL = percent leaking lids

PLO = percent leaking offtakes

\* Unless EPA promulgates more stringent limits after review of the standard.

Note: For a list of track selections, see the handout entitled “American Coke and Coal Chemicals Institute - Coke Oven NESHAP Track Selection Table.”